



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/668,721

09/22/2003

Paul Haahr

0026-0151

2439

44989 7590 08/04/2009

HARRITY & HARRITY, LLP  
11350 Random Hills Road  
SUITE 600  
FAIRFAX, VA 22030

EXAMINER

PYO, MONICA M

ART UNIT

PAPER NUMBER

2161

MAIL DATE

DELIVERY MODE

08/04/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/668,721	<b>Applicant(s)</b> HAAHR ET AL.	
	<b>Examiner</b> MONICA M. PYO	<b>Art Unit</b> 2161	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 79-117 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 79-117 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

Art Unit: 2161

***DETAILED ACTION***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/14/2009 has been entered.
2. Claims 79-117 are currently pending in this application. Claims 79, 94-96, 111, 112, 116 and 117 are independent claims. In the Amendment filed 5/14/2009, claims 79, 95-96, 112 and 117 are amended. Claims 79-117 are rejected.

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 79-114 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,026,388 issued to Liddy et al. (hereinafter Liddy) in view U.S. Patent No. 7,130,849 issued to Yayoi et al. (hereinafter Yayoi).

Regarding claims 79, 94 and 95, Liddy disclose a method comprising:

**storing, in a memory of the device, search query-search document association in a database** (Liddy: col. 7, lns. 14-51);

**receiving, by a processor of the device, a search query** (Liddy: col. 7, lns. 44-51);

Art Unit: 2161

**identifying, by the processor, a set of search result documents using the received search query** (Liddy: col. 3, lns. 7-15; col. 3, lns. 63-col. 4, lns. 2; col. 7, lns. 51-64).

Liddy discloses the refinement method (Liddy: col. 8, lns. 12-47) but Liddy does not explicitly disclose the feature of each search query-search document association representing a one-to-one pairing of an issued search query and a search document and the feature of formulating by the processor, a search query refinement suggestion based on at least one of the search result documents and at least one search query-search document association in the database. However, such features are well known in the art as disclosed in Yayoi (Yayoi: col. 7, lns. 19-44; col. 8, lns. 26-51; col. 9, lns. 3-16; col. 14, lns. 26-42) and it would have been obvious to one with ordinary skill in the art at the time of invention to utilize the teachings of Yayoi in the system of Liddy in view of improving the search query refinement system.

Additionally, regarding claims 96 and 111, Liddy and Yayoi disclose a feature of identifying, by the processor, the search result documents to stored search documents; identifying, by the processor, for each of the stored search documents that matches one of the search result documents, a query-document association in the plurality of query-document associations (Yayoi: col. 7, lns. 19-44; col. 8, lns. 26-51; col. 10, lns. 5-26).

Also, regarding claims 112, 116 and 117, Liddy and Yayoi disclose a feature of creating, by a processor of the device, a query source reference (Yayoi: col. 2, lns. 31-col. 3, lns. 16).

Regarding claim 80, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion comprises:

Art Unit: 2161

identifying search documents of the search query-search document association (i.e., document-query matching) that match the at least one search result document within the database (Liddy: col. 8, lns. 13-47; col. 9, lns. 19-33); and

using the issue search queries associated with the identified search documents in the formulating (Liddy: col. 8, lns. 13-40) and (Yayoi: col. 7, lns. 19-44).

Regarding claim 81, Liddy and Yayoi disclose the method further comprising:

assigning weights to the search query-search document association in the database based on relevancies of the search documents to the issued search queries in the search query-search document association (Liddy: col. 7, lns. 14-51; col. 12, lns. 1-20; col. 20, lns. 48-col. 21, lns. 12) and (Yayoi: col. 7, lns. 19-44; col. 9, lns. 3-16); and

storing the weights in the database (Liddy: col. 20, lns. 48-col. 21, lns. 1).

Regarding claims 82 and 99, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

computing term vectors using terms in the issued search queries of the search query-search document associations and the assigned weights (Liddy: col. 7, lns. 14-51; col. 25, lns. 14-20) and (Yayoi: col. 9, lns. 3-16 & 33-51).

Regarding claims 83 and 100, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

Art Unit: 2161

normalizing the term vectors (Liddy: col. 23, lns. 21-23) and (Yayoi: col. 10, lns. 5-26; fig. 12); and

forming clusters of the identified search documents based on distances of each of the normalized term vectors from a common origin (Liddy: col. 23, lns. 20-28; col. 25, lns. 34-45; col. 26, lns. 3-9).

Regarding claims 84 and 101, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

multiplying, by a constant, those of the normalized term vectors that include constituent terms with the received search query to downwardly weight the constituent terms to produce an independence of the clusters from the terms of the received search query (Liddy: col. 23, lns. 21-23; col. 25, lns. 34-45;) and (Yayoi: col. 14, lns. 33-63; fig. 12).

Regarding claims 85 and 102, Liddy and Yayoi disclose the method further comprising:  
assigning a relevance score to the at least one search result document (Liddy: col. 12, lns. 1-10 and 15-20),

wherein the formulating the search query refinement suggestion further includes (Liddy: col. 7, lns. 57-64) and (Yayoi: col. 7, lns. 19-44;):  
ranking the clusters based on the relevance score and a number of identified search documents in the clusters (Liddy: col. 26, lns. 3-9 and 14-26) and (Yayoi: col. 15m kns, 7-31; fig. 12).

Art Unit: 2161

Regarding claims 86 and 103, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

selecting ones of the clusters based on the ranking (Liddy: col. 28, lns. 27-36).

Regarding claims 87 and 104, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

computing a centroid for each of the selected clusters (Liddy: col. 25, lns. 34-45); and

determining a score for each unique search query in the selected clusters based on the centroids (Liddy: col. 25, lns. 34-45; col. 26, lns. 14-26).

Regarding claims 88 and 105, Liddy and Yayoi disclose the method wherein the computing the score for each of the unique search queries comprises:

multiplying a frequency of the issued search queries in the search query-search document associations in the selected clusters times a length of a distance vector measured from the term vectors of the issued search queries in the search query-search document associations to the centroids of the selected clusters (Liddy: col. 23, lns.20-28; col. 25, lns. 34-45) and (Yayoi: col. 7, lns. 19-44; col. 8, lns. 26-51; col. 9, lns. 3-16).

Regarding claims 89 and 106, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

Art Unit: 2161

designating a name to each of the selected clusters based on the computed scores of the unique search queries of the selected clusters (Liddy: col. 25, lns. 30-37).

Regarding claims 90 and 107, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

comparing the computed scores of the unique search queries of the named clusters to a threshold (Liddy: col. 7, lns. 44-51; col. 15, lns. 11-17); and

selecting those cluster names that exceed the threshold to obtain the search query refinement suggestions (Liddy: col. 28, lns. 27-38) and (Yayoi: col. 9, lns. 3-16).

Regarding claims 91 and 108, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

sorting the obtained search query refinement suggestions based on a relevance score assigned to each of the search result documents corresponding to the identified search documents associated with the named clusters and a number of the identified search documents in the named clusters (Liddy: col. 12, lns. 1-10 and 15-20; col. 33, lns. 45-50 and 55-61) and (Yayoi: col. 7, lns. 19-44; col. 8, lns. 26-51).

Regarding claims 92 and 109, Liddy and Yayoi disclose the method further comprising: presenting the sorted search query refinement suggestions to a user (Liddy: col. 7, lns. 57-64).



Art Unit: 2161

Regarding claims 93 and 110, Liddy and Yayoi disclose the method further comprising: augmenting the sorted set of search query refinement suggestions with supplemental queries that include one or more of the terms of the search query and negated forms of all terms appearing in the set of search query refinement suggestions, but not appearing in the search query (Liddy: col. 7, lns. 44-51 and 57-64) and (Yayoi: col. 7, lns. 19-44; col. 8, lns. 26-51); and

presenting the augmented search query refinement suggestions to a user (Liddy: col. 7, lns. 57-64; col. 8, lns. 18-28).

Regarding claim 97, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion comprises:

using the issued search queries associated with the identified query-document associations in the formulating (Liddy: col. 7, lns. 14-51) and (Yayoi: col. 8, lns. 26-51).

Regarding claim 98, Liddy and Yayoi disclose the method further comprising:

assigning weights to the stored query-document associations based on relevancies of the search documents to the issued search queries in the query-document associations; and storing the assigned weights (Liddy: col. 12, lns. 1-20; col. 20, lns. 48-col. 21, lns. 12) and (Yayoi: col. 8, lns. 26-51).

Regarding claim 113, Liddy and Yayoi disclose the method further comprising:

obtaining at least one search result document using the received search query (Liddy: col. 3, lns. 7-15; col. 3, lns. 63-col. 4, lns. 2; col. 7, lns. 51-64),

Art Unit: 2161

wherein the formulating the search query refinement suggestion further comprises (Liddy: col. 3, lns. 7-15; col. 3, lns. 63-col. 4, lns. 2; col. 7, lns. 51-64) and (Yayoi: col. 8, lns. 26-51):

comparing the at least one search result document to the retrieved search documents (Liddy: col. 5, lns. 22-28; col. 8, lns. 29-40),

identifying the retrieved search documents that match the at least one search result document (Liddy: col. 8, lns. 13-47), and

using the issued search queries associated with the identified search documents in the formulating (Liddy: col. 8, lns. 13-40) and (Yayoi: col. 9, lns. 3-16).

Regarding claim 115, Liddy and Yayoi disclose the method wherein the formulating the search query refinement suggestion further comprises:

ranking the search query refinement suggestion based on the computed term vectors (Liddy: col. 26, lns. 3-9 and 14-26),

wherein the method further comprises: presenting the ranked search query refinement suggestion to a user (Liddy: col. 7, lns. 57-64; col. 8, lns. 18-28) and (Yayoi: col. 9, lns. 33-46).

### ***Response to Arguments***

5. Applicant's arguments with respect to claims 79-117 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2161

***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MONICA M. PYO whose telephone number is (571)272-8192. The examiner can normally be reached on Mon- Fri 8:00 - 2:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Apu Mofiz can be reached on 571-272-4080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Etienne P LeRoux/  
Primary Examiner, Art Unit 2161

Monica M Pyo  
Examiner  
Art Unit 2161

07/2009